

BYLOV, B.F.

Generalization of Perron's theorem. Dif. urav. 1 no. 12:1597-
1600 D '65. (MIRA 18:12)

1. Moskovskiy aviatsionnyy tekhnologicheskij institut.
Submitted Sept. 30, 1963.

I:24730-66 EWT(d) IJP(c)

ACC NR: AP6015813

SOURCE CODE: UR/0039/65/066/002/0215/0229

AUTHOR: Bylov, B. F. (Stupino)

ORG: none

TITLE: Structure of the solutions of a system of linear differential equations with almost-periodic coefficients

SOURCE: Matematicheskii sbornik, v. 66, no. 2, 1965, 215-229

TOPIC TAGS: linear differential equation, differential equation system, mathematic matrix

ABSTRACT: A homogeneous system of n linear differential equations with real, almost-periodic coefficients is written as one vector equation $\frac{dx}{dt} = Ax$,

where $x = x(t)$ is the vector and $A = A(t)$ an almost-periodic matrix. The set of equations $\frac{dx}{dt} = \tilde{A}x$,

is denoted as $H(A)$.

Theorem 1. If each equation of $H(A)$ has a unique system of solutions $\tilde{X} = \{\tilde{x}_1, \tilde{x}_2, \dots, \tilde{x}_n\}$, whose resulting matrix $\tilde{\Phi}$ satisfies the condition

$$\ln|\det \tilde{\Phi}| > 0,$$

then in the solutions of the system x in the expressions

$$x(t) = \|x(0)\| e^{\int_0^t A \, dt} \Phi.$$

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UDC: 517.94

L. 24730-66

ACC NR: AP6015813

the functions $\tilde{p}_i(t)$ and vectors $\tilde{\varphi}_i(t)$ ($i = 1, 2, \dots, n$) are almost periodic.

In addition, each equation (2) of $H(A)$ may, by Lyapunov transform $x = \tilde{L}y$ with almost-periodic matrix L , be reduced to the form

$$\frac{dy}{dt} = \tilde{B}y,$$

where $B = \text{diag} \{ \tilde{p}_1, \tilde{p}_2, \dots, \tilde{p}_n \}$.

According to J. C. LILLO (Proc. Amer. Math. Soc. 12, No. 3, 1961, 400-407) the solutions x_1, x_2, \dots, x_n of equation (1) are called "detached" if, given $-\infty < t < \infty, -\infty < s < \infty$, the inequalities

$$\frac{1}{C} e^{\lambda_i(t-s) - \mu|t-s|} < \frac{\|x_i(t)\|}{\|x_i(s)\|} < C e^{\lambda_i(t-s) + \mu|t-s|},$$

are satisfied where $\lambda_1 > \lambda_2 > \dots > \lambda_n, \mu = \min_{(i+j)} \frac{|\lambda_i - \lambda_j|}{4}$ and $C > 0$ is some constant.

Theorem 2. If equation (1) has a system of detached solutions $X = \{x_1, x_2, \dots, x_n\}$, then in the polar form of each of these solutions the functions p_i and vectors φ_i are almost periodic. In addition, there exists the Lyapunov transform $x = Ly$, which is determined by the almost-periodic matrix L and reduces equation (1) to the diagonal form $dy/dt = By$. Orig. art. has: 48 formulas. [JPRS]

SUB CODE: 12 / SUBM DATE: 13Sep63 / ORIG REF: 002 / OTH REF: 002

Card 2/2 *7/10/63*

L 29118-66 EWT(d) INP(c)

ACC NR: AP6018845

SOURCE CODE: UR/0039/65/067/003/0338/0344

AUTHOR: Bylov, B. F. (Moscow)

ORG: none

TITLE: Reduction of a system of linear equations to the diagonal form

16
B

SOURCE: Matematicheskii sbornik, v. 67, no. 3, 1965, 338-344

TOPIC TAGS: linear equation, approximation

ABSTRACT: The article, which presents a generalization of results given in an earlier article by the author, formulates and outlines the proof of the following fundamental theorem: If for a certain system of solutions

to the equation $\frac{dx}{dt} = A(t)x$ $X = (x_1, x_2, \dots, x_m)$ $(x_i = \|x_i(0)\| \varphi_i \exp \int p_i dt; i = 1, 2, \dots, m)$

the inequalities $\int (p_{i+1} - p_i) dt > a(t - \tau) - d$ $(t > \tau > 0; i = 1, 2, \dots, m-1)$

are satisfied, where $a > 0$ and $d > 0$ are certain constants (the condition of integral approximation of the solutions), then there exists the Lyapunov transform $x = Ly$, which reduces system (1) to the diagonal form

where $D_1 = \text{diag}(p_1, p_2, \dots, p_m)$ $\frac{dy}{dt} = D_1 y$ Orig. art. has: 25 formulas. [JPRS]

SUE CODE: 12 / SUBM DATE: 23Dec63 / ORIG REF: 005

Card 1/1 CC

UDC: 517.947.92

ACC NR: AM6035815

Monograph

UR/

Bylov, Boris Fedorovich; Vinograd, Robert El'yukomovich; Grobman, David Matveyevich;
Nemytskiy, Victor Vladimirovich

Lyapunov's theory of exponents and its application to problems of stability (Teoriya pokazateley Lyapunova i yeye prilozheniya k voprosam ustoychivosti) Moscow. Izd-vo "Nauka", 1966. 576 p. biblio!, index. 8000 copies printed.

TOPIC TAGS: mathematic method, mathematics, mathematic transformation

PURPOSE AND COVERAGE: This book is intended for students, fellows in mathematics departments, and mathematicians. It is concerned with a study of the qualitative behavior of a differential equation system. New findings relative to the stability of the equilibrium state and the asymptotic behavior of solutions are included, as well as the conditions which assure the stability of these characteristics. The book's contents can be considered a development of Lyapunov's ideas. There are 131 references, 92 of which are Soviet.

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UDC: 517.91

ACC NR: AM6035815

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SUB CODE: 12/

SUBM DATE: 09Jun66/

ORIG REF: 091/

OTH REF: 039/

Card 2/2

ACC NR: AP7008903

SOURCE CODE: UR/0199/66/007/004/0751/0784

AUTHOR: Bylov, B. F.

ORG: none

TITLE: Almost reducible systems

SOURCE: Sibirskiy matematicheskiy zhurnal, v. 7, no. 4, 1966, 751-784

TOPIC TAGS: linear differential equation, differential equation system

SUB CODE: 12

ABSTRACT: The present article is a generalization of results obtained by the author in his candidate's dissertation and published in a previous article. The author considers the system of linear differential equations

$$dx_i/dt = \sum_{j=1}^n a_{ij} x_j \quad (i = 1, 2, \dots, n), \quad (1)$$

whose coefficients $a_{ij} = a_{ij}(t)$ are complex-valued functions of real variable t , defined, continuous, and bounded module the entire semiaxis $[0, \infty]$. System (1) can be written in the form of a matrix equation

$$dx/dt = Ax,$$

Considered with system (1) is the system adjoint to it:

$$du/dt = -uA,$$

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0729 17/2

ACC NR: AP7008903

The following fundamental definition is given: System (1) is said to be almost reducible to system $dz/dt = Bz$ if, for any $\delta > 0$, there can be indicated a Lyapunov transformation $x = L\delta y$ such that system (1) reduces to the system $dy/dt = (B + \Phi)y$ and $\|\Phi\| < \delta$; in this case, it may also be said that matrix A is almost reducible to matrix B .

It was shown by the author in his previous article that the concept of "almost reducibility" is transitive. In the present article the author uses several special Lyapunov transformations to formulate a number of theorems based directly on the above definition. Particular consideration is given to systems which are said to be close to partitioned diagonal systems. Orig. art. has: 78 formulas. [JPRS: 38,417]

Card 2/2

MEL'KUMOVA, A.S.; BYLOV, I.S.; PUSHKINA, N.N.

Clinical aspects of occupational poisoning of thio rubber
workers. Uch. zap. Mosk. nauch.-issl. inst. san. i gig. no.9:
90-94'61 (MIRA 16:11)

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VYALOV, A.M.; BAGNOVA, M.D.; VASIL'YEV, A.S.; PUSHKINA, N.N.; YUSHKEVICH,
L.B.; BULYCHEV, G.V.; BYLOV, I.S.; GENKIN, A.G.; ZHIDKOVA, L.V.;
ZHIGULINA, L.A.

Early changes in the state of health of workers in the cumene
process of phenol and acetone production. Uch. zap. Mosk. nauch.-
issl. inst. san. i gig. no. 9:13-16 '61 (MIRA 16:11)

*

VYALOV, A.M.; BAGNOVA, M.D.; KUBLANOVA, P.S.; PUSHKINA, N.N.; BULYCHEV, G.V.:
BYLOV, I.S.; GENKIN, A.G.; KOTEL'NIKOVA, M.P.; SKLYANSKAYA, V.S.

Changes in the health of workers engaged in the production of
synthetic fatty acids. Uch.zap. Mosk.nauch.-issl. inst. san.
i gig. no.9:50-54 '61 (MIRA 16:11)

*

VYALOV, A.M.; BAGNOVA, M.D.; BULYCHEV, G.V.; BYLOV, I.S.; GENKIN, A.G.;
KUBLANOVA, P.S.; PUSHKINA, N.N.; YUSHKEVICH, L.B.

Comparative evaluation of health conditions in workers employed in
producing synthetic fatty acids and higher fatty alcohols. Gig. i
san. 26 no.4:15-21 Ap '61. (MIRA 15:5)

1. Iz klinicheskogo otdela Moskovskogo nauchno-issledovatel'skogo
instituta gigiyeny imeni F.F.Erismana Ministerstva zdravookhraneniya
RSFSR.

(CHEMICAL INDUSTRIES---HYGIENIC ASPECTS)
(ACIDS, FATTY---PHYSIOLOGICAL EFFECT) (ALCOHOLS---PHYSIOLOGICAL EFFECT)

BYLOV, I.S.

Functional changes in the kidneys due to rheumatic fever. Uch.
zap.Mosk.nauch.-issl.inst.san. i gig. no.8:83-89'61.(MIRA 16:7)

1. Nauchnyy rukovoditel' deystvitel'nyy chlen AMN SSSR prof.A.I.
Nesterov.

(RHEUMATIC FEVER) (KIDNEYS)

BYLOV, V.N.

Opening of the All-Union Agricultural Exhibition. Biul.Glav.
bot.sada no.19:145-148 '54. (MLRA 8:2)
(Moscow--Botanical gardens)

BYLOV, V.N.

Results of the activities of the Main Botanical Garden of the
Academy of Sciences of the U.S.S.R. during 1951-1955. Biul.Glav.
bot.sada no.26:98-103 '56. (MLBA 10:2)

1. Glavnyy botanicheskiy sad Akademii nauk SSSR.
(Moscow--Botanical gardens)

BYLOV, V.N.; MAKHALIN, M.A.

Conference on remote hybridization of plants and animals. Biol.
Glav. bot. sada no.31:126-129 '58. (MIRA 12:5)

1. Glavnyy botanicheskiy sad AN SSSR.
(Hybridization)

TSITSIN, N.V., akademik, otv.red.; BREZHNEV, D.D., akademik, zamestitel' otv.red.; GORYUNOV, D.V., zamestitel' otv.red.; BYLOV, V.N., red.; GOLOVINSKAYA, K.A., kand:biolog.nauk; red.; KELLI, A.Ch., red.; LAPIN, P.I., red.; MAKHALIN, M.A., red.; OGOLEVETS, G.S., red.; FORTUNATOV, I.K., red.izd-va; VASINA-POPOVA, Ye.T., red.izd-va; GUSKOVA, O.M., tekhn.red.

[Remote hybridization of plants and animals; problems in fruit culture, forestry, and animal breeding] Otdalennaya gibrizatsiya rastenii i zhivotnykh; voprosy plodovodstva, lesovodstva i zhivotnovodstva. Moskva, Izd-vo Akad.nauk SSSR, 1960. 597 p. (MIRA 13:5)

1. Vsesoyuznaya akademiya sel'skokhozyaystvennykh nauk imeni V.I. Lenina. 2. Pervyy vitse-prezident Vsesoyuznoy akademii sel'skokhozyaystvennykh nauk imeni V.I.Lenina (for Brezhnev). 3. Institut biologicheskoy fiziki Akademii nauk SSSR i Vserossiyskiy nauchno-issledovatel'skiy institut prudovogo rybnogo khozyaystva, Moskva (for Golovinskaya).

(Hybridization)

BYLOV, V.N.; PODDUBNAYA-ARNOL'DI, V.A.

Floriculture in Holland. Biul. Glav. bot. sada no.41:119-123
'61. (MIRA 14:11)

1. Glavnyy botanicheskiy sad AN SSSR.
(Holland—Floriculture)

LAPIN, P.I.; BYLOW, V.N.

Zonal testing of a new Dutch tulip in the U.S.S.R. Biul. Glav. bot.
sada no. 44:19-23 '61. (MIRA 5:2)

1. Glavnyy botanicheskiy sad AN SSSR.
(Tulips)

BYLOV, V.N.

In botanical gardens of the Polish People's Republic. Biul.Glav.
bot.sada no.44:95-99 '61. (MIRA 15:2)

1. Glavnyy botanicheskiy sad AN SSSR.
(Poland--Botanical gardens)

BYLOV, V.N.; SHTAN'KO, I.I.; YUDINTSEVA, Ye.V.; MIKHAYLOV, I.L.;
TSITSIN, N.V., akademik, otv. red.; OGOLEVETS, G.S., red.
izd-va; VOLKOVA, V.V., tekhn. red.

[Roses; brief results of introduction at the Main Botanical
Garden of the Academy of Sciences of the U.S.S.R.] Rozy;
kratkie itogi introduktsii v Glavnom botanicheskom sadu
Akademii nauk SSSR. Moskva, Izd-vo Akad. nauk SSSR, 1962.
223 p. (MIRA 15:8)

1. Moscow. Glavnyy botanicheskiy sad.
(Moscow—Roses—Varieties)

BYLOV, V.N.; GRINKEVICH, N.G.

Viability and the conditions of a prolonged storage of the pollen
of ornamental flowering plants. Biul. Glav. bot. sada
no.45:38-46 '62. (MIRA 16:2)

1. Glavnyy botanicheskiy sad AN SSSR.
(Pollen—Storage)
(Flowers)

TSITSIN, N.V., akademik, otv. red.; BYLOV, V.N., red.; VERZILLOV,
V.F., red.; KUL'TIASOV, M.V., red.; LAPIN, P.I., red.;
MALYGIN, Yu.N., red.; OGOLEVETS, G.S., red.; SUKHORUKOV,
K.T., red.; CHERKASSKIY, Ye.S., red.; SAFONOV, V.I., red.

[~~E~~volutionary biochemistry of plants] Evoliutsionnaia bio-
khimiia rastenii. Moskva, Izd-vo "Nauka," 1964. 142 p.
(MIRA 17:4)

1. Moscow. Glavnyy botanicheskiy sad.

BYLOV, V.N., kand. biol. nauk; ZAYTSEVA, Ye.N., kand. biol.
nauk; MILOVIDOVA, N.D., red.; STREL'TSOVA, N.F.,
red.

[Tulips; the best varieties] Tiul'pany; luchshie sorta.
Moskva, Kolos, 1965. 126 p. (MIRA 18:7)

BYLOVA, A. K.

Bylova, A. K.

"The biology of Tartar 'molokan' (*Mulgedium tataricum* D. C.)." "in
Education RSFSR. Moscow State Pedagogical Inst imeni V. I. Lenin.
Moscow, 1956 (Dissertation for the degree of Candidate in Biological
Sciences)

Knizhnaya letovis'
No. 25, 1956. Moscow

BYLOVA, A.M.

Root system of *Mulgeaium tataricum* DC. Bot. zhur. 43 no.4:560-567
Ap '58. (MIRA 11:6)

1. Moskovskiy pedagogicheskiy institut im. V.I. Lenina.
(Lettuce) (Roots (Botany))

BYLOVA, K. N.

"The segregation of recessive embryonic lethal factors in the inbreeding of bivalent selection strains of silkworms." Department of Genetics, (Chief: M. I. Slonim), Central Asian Institute of Sericulture, (Dir: E. B. Romanov), Tashkent. (p. 625) by Efroymsen, V.P.; and Bylova, K. N.

SO: Biological Journal (Biologicheskii Zhurnal) Vol. V, 1936, No. 4

BYL'SKIY, L.I.

Pneumatic PDZ-1 bit dressing machine. Gor. Zhur. no.5:49-50 My '60.
(MIRA 14:3)

1. Zamestitel' glavnogo konstruktora Vornoezhskogo zavoda kuznechno-
pressovogo oborudovaniya.
(Boring machinery--Maintenance and repair)

BYL'SKIY, L.I., inzh.

New boring-bit sharpening machine. Vest.mash. 40 no.2:38-39
F '60. (MIRA 13:5)
(Boring machinery--Maintenance and repair)

BYL'SKIY, L.I.

The P951 hydraulic 1,000-ton capacity press for sharpening boring bits. Biul.tekh.-ekon.inform. no.9:29-31 '61. (MIRA 14:9)
(Power presses)

AUTHORS: Shneyerov, Ya.A., Derfel', A.G., Kotin, A.G., Byl'skiy,
M.T. and Alimov, A.G. SOV/130-58-8-5/18

TITLE: Pre-refining Pig Iron in Ladles with a Steam-oxygen
Mixture (Predvaritel'naya obrabotka chuguna v kovshakh
parokislородnoy smes'yu)

PERIODICAL: Metallurg, 1958, Nr 8, pp 11 - 14 (USSR)

ABSTRACT: At the "Azovstal'" Works, hot metal forms 75% of the
open-hearth furnace charge and conditions are therefore
particularly suitable for pre-refining. A semi-full-
scale installation (Figure 1) was constructed in the
mixer house at the works. The authors describe tests
on 130 ladles (114 phosphoric and 16 ordinary open-hearth
grade). With 20-40% steam evolution of brown fumes was
avoided. The following additions (in % of the weight of
phosphoric iron) were also tested: limestone 1.5 and 3
with 1% ore in the latter case; ore, 2.5 and 5%; ore
and limestone, 1.5 and 2.5% each. With the ordinary
grade: limestone, 1.5; ore 1.5; ore and limestone 1.5
each. The authors describe the effects of the different
additions on iron composition and lance consumption
(which is associated with the formation of slag capable
of coating the lance). With increasing consumption of

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SOV/130-58-8-5/18

Pre-refining Pig Iron in Ladles with a Steam-oxygen Mixture

oxygen per ton of metal ($3-8 \text{ nm}^3$), oxidation of manganese and silicon increases. Steam consumption was regulated to prevent fume formation; the highest oxygen: steam ratios were obtained with large amounts of additions, which produced a protective slag layer. Both top blowing and lancing were tried, tube consumptions being 300-400 and 100 mm, respectively, per lancing. Temperatures were measured with platinum/platinum-rhodium thermocouples: the mean temperature rise during the lancing was $25-70^\circ\text{C}$, the rise with additions being greater because of the greater oxidation of silicon. Analysis of the metal showed that good mixing occurred during mixing. Metal losses were as follows: splashes, 0.51%, evolution in fume 0.04%. The hydrogen content of the metal was found to rise during lancing from $2.3 - 3.9$ to $4.6 - 6.0 \text{ cm}^3/100 \text{ g}$, falling during pouring into the mixer to $4.2 - 4.3 \text{ cm}^3/100 \text{ g}$.

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SOV/130-58-8-5/18
Pre-refining Pig Iron in Ladles with a Steam-oxygen Mixture

There are 2 figures.

ASSOCIATIONS: Ukrainskiy institut metallov (Ukrainian Institute of Metals) and Zavod "Azovstal'" ("Azovstal'" Works)

Card 3/3

1. Iron--Production
2. Open hearth furnaces--Operation
3. Dippers--Applications

L 2448-66 EWT(m)/EWP(j)/T FM
 AC: NR: AP6002590 (A) SOURCE CODE: UR/0286/65/000/023/0088/0088

AUTHORS: Petkevich, A. A.; Kopitvanskiy, L. R.; Drugov, F. P.; Murav'yeva, T. D.;
Byl'tsova, V. K.; Yudina, E. G.; Ponomarev, V. V.; Ryazanov, G. N.

ORG: none

TITLE: Cover for pneumatic ¹⁵tires of wheeled vehicles with a multilayer carcass.
 Class 63, No. 176808¹⁵/announced by Krasnoyarsk Tire Factory (Krasnoyarskiy shinnyy zavod)

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 23, 1965, 88

TOPIC TAGS: tire, vehicle, polyamide

ABSTRACT: This Author Certificate presents a cover for ⁵pneumatic tires of wheeled vehicles with a multilayer carcass formed by polyamide and viscose cords.¹⁵ For improved tire life, the first and last few layers are made of polyamide cords, while the middle layers consist of viscose cords (see Fig. 1).

Card 1/2 UDC: 629.11.012.553.1 2

L 22448-66

ACC NR: AP6002590

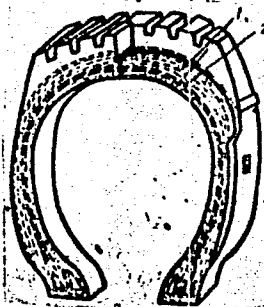


Fig. 1. 1 - carcass
layer of polyamide
cord; 2 - viscose
cord carcass layer.

Orig. art. has: 1 figure.

SUB CODE: 13/

SUBM DATE: 03Jan64

Cord 2/2

B.L.G.

KUZNETSOV, B.A., hand.tekhn.nauk; PODOPRIGORA, A.S.; inzh.; BYLYA, A.K., inzh.
KADIGROV, F.Ye., inzh.

Research on the interaction of a wheel and a rail. Vop. rud.transp.
no.4:244-270 '60. (MIRA 14:3)

1. Dnepropetrovskiy gornyy institut im. Artema.
(Mine railroads)

KUZNETSOV, B.A., kand.tekhn.nauk; PODOPRIGORA, A.S., inzh; BYLYA, A.K., inzh.
KADIGROB, F.Ye., inzh.

Research on the process of a wheel slipping onto a rail. Vop. rud.
transp. no.4:270-299 '60. (MIRA 14:3)

1. Dnepropetrovskiy gornyy institut im. Artema.
(Mine railroads)

S/153/61/004/006/006/008
E134/E453

AUTHORS: Voskresenskiy, V.A., Byl'yev, V.A.

TITLE: A study of the plasticization of polyvinyl chloride

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy,
Khimiya i khimicheskaya tekhnologiya, v.4, no.6, 1961,
1016-1021

TEXT: This paper describes the effects of the chemical nature of the plasticizers (polarity, molecular size and shape, structural group, etc) on the plasticization of PVC. Much of the work is based on previous work by the same authors. Tensile strength and % elongation figures are presented for PVC plasticized with nitromethyl-cyclohexanol, nitromethyl-chlorocyclohexanol and acetyl-nitromethyl-cyclohexane. The results show that the plasticizing effect of the compounds increases with increased compatibility with the polymer and that this in turn is related to the chemical type and structure of the plasticizers and the presence of various functional groups. The effect of various plasticizers of similar chemical structure, but with different functional groups, was studied. Phthalates with Cl and NO₂
Card 1/3

A study of the plasticization ...

S/153/61/004/006/006/008
E134/E453

substitution in the benzene ring, and phosphates with Cl in the ring were investigated. A table of properties of dibutyl phthalate and tricresyl phosphate with the above variations is provided; properties include tensile strength, % elongation, hardness and a specially designed low temperature resistance test. A table showing the effect of benzene immersion is given as well as some swelling curves. The introduction of these functional groups changes the physical properties and swelling characteristics considerably. Another investigation deals with the effect of the chain-length of the non-polar portion of the molecule on plasticizing efficiency. A table of tensile strength and hardness is provided for PVC plasticized with methyl, ethyl, propyl and butyl phthalate. Increasing chain length improves the plasticizing effect. The plasticizing effect of diphenyl, naphthalene and anthracene was studied by measurement of hardness, tensile strength and % elongation. As compatibility decreases from diphenyl to anthracene, the plasticizing effect is also reduced; this was considered to be an effect of chemical structure, size and molecular shape. A quantitative investigation of the

Card 2/3

A study of the plasticization ...

S/153/61/004/006/006/008
E134/E453

effect of air storage for 12 months was carried out on PVC plasticized with dibutyl phthalate, dibutyl nitrophthalate and dibutyl chlorophthalate respectively. The results of measurements of tensile strength, % elongation and hardness showed that ageing takes place much more slowly when the two substituted butyl phthalates are used as plasticizers. This was considered to be partly the effect of chemical structure and greater compatibility. For the same reason the substituted phthalates are held more strongly by the polymer and not extracted as easily by solvents. Benzene swelling curves for PVC plasticized with dibutyl phthalate and dibutyl chlorophthalate are given before and after ageing. There are 3 figures and 8 tables.

ASSOCIATION: Kazanskiy inzhenerno-stroitel'nyy institut
Kafedra khimii (Kazan' Institute of Construction
Engineering, Department of Chemistry)

SUBMITTED: July 6, 1960

Card 3/3

15.8500 2209.2409

S/080/61/034/001/018/020
A057/A129

AUTHORS: Voskresenskiy, V.A., Byl'yev, V.A., Orlova, Ye.M.

TITLE: On Some Regularities in Plastification of Polyvinyl Chloride by Non-Polar and Polar Substances

PERIODICAL: Zhurnal Prikladnoy Khimii, 1961, Vol. 34, No. 1, pp. 225-227

TEXT: The effect of the non-polar solid substances in diphenyl, naphthalin, and anthracene on plastification of polyvinyl chloride [ПБ-1 (PB-1) type and ПФ-4 (PF-4)] and dependence of the plastification effect on the chain length of the non-polar part of some polar plasticizers (dimethyl-, diethyl-, dipropyl-, and dibutyl-phthalate) were investigated. The plasticizer was added to the polymer on rolls at 135-140°C and from the obtained film 2.5-3.0 mm thick sheets were formed by hot pressing. Compositions of the mixtures with non-polar plasticizers are given in Tab.1 and properties of the obtained mixtures in Tab.2. The results demonstrate that compatibility and plastification effect decrease from diphenyl to naphthalin and then to anthracene. This difference in plastification properties is due to the influence of size and
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X

22533
S/080/61/034/001/018/020
A057/A129

On Some Regularities in Plastification of Polyvinyl Chloride by Non-Polar and Polar Substances

form of the molecule of the plasticizer. Diphenyl has the best compatibility because of the elongated shape of its molecule, while naphthalin and especially anthracene molecules are much bigger. A new effect was observed with diphenyl-containing mixtures, viz., irreversible strengthening at room temperature with cold stretching of the sample resulting in unexpectedly high toughness (141.1 kg/cm² instead of 80-85 kg/cm² corresponding to the level of hardness). The increase in hardness with elongation is demonstrated in Tab. 3. The observed effect of strengthening is apparently caused not only by the orientation of molecules and better distribution of the plasticizer in the polymer phase, but also by increasing of the crystal phase in the system polyvinyl chloride - diphenyl during cold stretching. Heating of the strengthened samples to 100-120°C caused momentarily collapse of the orientation effect and the material obtained rubberlike elasticity. Effect of the chain length of the non-polar part of polar plasticizers on plastification was studied on the following 3 compositions: no. 1 - (in weight parts) 100 PF-4 resin, 64 plasticizer, 3 calcium stearate (stabilizer); no. 2 - 100 PF-4 resin, 3 calcium stearate (stabilizer); no. 3 - 100 PF-4 resin, 3 calcium stearate (stabilizer), 3 calcium stearate (stabilizer).
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S/080/61/034/001/018/020
A057/A129

On Some Regularities in Plastification of Polyvinyl Chloride by Non-Polar and Polar Substances

um stearate, 20 (equimolecular parts) plasticizer; no.3 - 100 PF-4 resin, 3 calcium stearate, 10 (equimolecular parts) plasticizer. Plastification effect was estimated by the tensile strength σ (in kg/cm^2) and hardness H_B (in kg/cm^2). The obtained results (Tab.4) demonstrate that increase in the non-polar part of the polar plasticizer caused increase in plastification effect. There are 4 tables.

SUBMITTED: March 19, 1960

X

Card 3/7

15.8530 also 2209.2409

27068
S/080/61/034/003/008/017
A057/A129

11.2210

AUTHORS: Voskresenskiy, V. A., Byl'yev, V. A., Orlova, Ye. M.

TITLE: Effect of high-frequency currents on the plastification of polyvinylchloride compositions.

PERIODICAL: Zhurnal prikladnoy khimii, v. 34, no. 3, 1961, 593 - 597

TEXT: The effect of a high-frequency (19.5 megacycles) current field on some plasticized polyvinylchloride compositions was investigated. A considerable improvement of physico-chemical and mechanical properties of the polyvinylchloride film was attained after a 2-minute high-frequency heating of the mix. Also solubility of the film in low-molecular liquids decreased. Considerations on the mechanism of processes occurring in plasticized polyvinylchloride mixtures during high-frequency heating were presented. High-frequency heating of thermoreactive press-powders before formation of press-articles is nowadays widely used. Several literature data are given, e. g., by M. I. Garbar and A. D. Sokolov [Ref. 1: Khim. prom., 2, 38 (1948)], B. M. Notkin and I. Sh. Pik [Ref. 2: Khim. prom. 7, 198 (1952)], H. E. Murray [Ref. 4: Modern Plastics, 34, 137 (1957)] etc., and improvements were effected in processing of plastics by means of high-frequency heating.

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S/080/61/034/003/008/017

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Effect of high-frequency currents on the...

Nevertheless simultaneously occurring processes of destruction and cross linking effected by this treatment were not investigated principally. In the present work one of the most important plastics - polyvinylchloride (PVC) - was investigated in relation to this problem. Plasticized compositions were prepared of PVC of the ПБ-1 (PB-1) type with dibutylphthalate, dibutylsebacinate, dimethylphthalate and 1-nitromethyl-2-chlorocyclohexanol-1. The following technological procedure was carried out: The polymer, plasticizer and the stabilizer were mixed and left 24 hrs for ripening at room temperature. Then a 1 - 2 cm thick layer of the mass was applied on an aluminum plate and the high-frequency treatment was carried out by means of a ГГ-107 (GG-107) generator. The distance between the surface of the mass and the mobile anode was 5 - 7 mm, anodic current 0.34 - 0.40 amp, net current 200 - 250 amp, and a 19.5 megacycle frequency was applied. Then the mass was rolled to a 0.25 - 0.30 mm thick film with a front roll at $135 \pm 2^\circ\text{C}$ and a back roll at $120 \pm 2^\circ\text{C}$, having a friction ratio of 1 : 1.25. The properties of these films were then investigated. The necessary minimum of high-frequency treatment was determined with a composition containing: 100 weight parts of PVC, 64 dibutylphthalate and 1.5 calcium stearate using a treatment of 1, 2, 3, 4, 5, 6, 7 or 8 minutes. Optimum improvement of the tensile strength σ and relative elongation Δl

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Effect of high-frequency currents on the...

of the PVC films was effected by the 2-minute high-frequency heating. In this case the temperature of the mass increases just to 60 - 65°C by the treatment, while a 5-minute treatment effects an increase in the temperature to 165°C. The high-frequency effect was tested also on other compositions (Table 1) and the obtained results are presented in Table 2. The improvement of the physical and mechanical properties of all investigated compositions by the 2-minute treatment is obvious, but the degree of the effect depends on the amount and type of plasticizer. Corresponding tests demonstrated also that the high-frequency treatment increases considerably the resistance of the plastic films against benzene, water, 1 N H₂SO₄ and 1 N NaOH solutions. The present authors assume that the observed improvement is effected by deformation of polar groups in the polymer chain and the molecule of the plasticizer (increasing polarization) resulting in a more intensive interaction between polymer and plasticizer. Thus the latter is better distributed between the chains of the polymer and so less extractable by low-molecular solvents. A 3 - 5 minute high-frequency heating effects, on the other hand, a rise in temperature resulting in already considerable destruction and cross-linking processes (the latter prevail). Thus in 5-minute treatments cross-linking processes effect a decrease in elasticity, solubility and softening temperature of the plasticized material. There are 5 figures, 2 tables and 16 references: 8 Soviet-bloc and 8



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Effect of high-frequency currents on the...

non-Soviet-bloc. The references to the four most recent English-language publications read as follows: H. E. Murray, Modern Plastics, 34, 137 (1957); Plastics Catalog, 455 (1944); Modern Plastics, 10, 116 (1945); A. Blake, Plastics, 210, 20 (1955).

Table 1. Composition of the mixtures

Composition of the mix	weight ratio of the components						
	no. 1	no. 2	no. 3	no. 4	no. 5	no. 6	no. 7
polyvinylchloride (resin PB-1)	100	100	100	100	100	100	100
dibutylphthalate	48	64	-	-	-	-	-
dibutylsebacate	-	-	48	64	-	-	-
dimethylphthalate	-	-	-	-	74	64	-
1-nitromethyl-2-chlorocyclohexanol-1 . .	-	-	-	-	-	-	100
calcium stearate	1.5	1.5	1.5	1.5	1.5	1.5	1.5

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36319

S/153/62/005/002/004/004
E112/E453

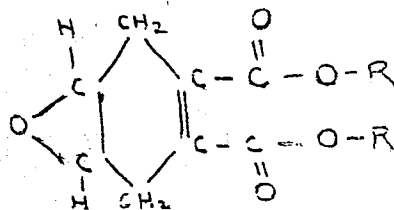
11.2231
15.8220

AUTHORS: Vozkresenskiy, V.A., Shakirzyanova, S.S.,
Byl'yev, V.A.

TITLE: Factors affecting the plastification of polyvinyl
chloride with the epoxides of the tetrahydrophthalates

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i
khimicheskaya tekhnologiya, v.5, no.2, 1962, 322-325

TEXT: Polyvinyl chloride was plasticized in the presence of
calcium stearate under conditions of constant weight ratios, and
also in molar proportions, with the esters of epoxy-tetrahydro-
phthalic acid of the general formula.



Card 1/3

S/153/62/005/002/004/004
E112/E453

Factors affecting the ...

where R = methyl, ethyl, propyl, butyl, isobutyl, isoamyl, octyl, nonyl and decyl. The following physico-chemical constants of the plasticized compositions were determined: 1) relative elongation; 2) hardness (according to Jones); 3) resistance to degradation; 4) physico-chemical constants were correlated with the structural characteristics of R (chain length, molecular size and configuration). Thus, the relative elongation increased from 185.5 to 270% when methyl was replaced by decyl, and when both the plasticizers were used in identical quantities. When both plasticizers were compared in molecular proportion, the increase in relative elongation amounted to 410% from 260%, respectively. It is concluded that the physico-chemical properties of the plasticized compositions is affected equally by the quantities of plasticizer used as by their chemical characteristics and the effects are similar to those described by the authors previously for the unsubstituted phthalates. The following esters of the epoxidized tetrahydrophthalic acid were found of special interest as plasticizers: Plasticizer no.1 - dibenzyl and no.2 - ethylenechlorhydrine. Their characteristics, such as

Card '2/3

Factors affecting the ...

S/153/62/005/002/004/004
E112/E453

stability to degradation, relative elongation and strength after 100 hours ageing are tabulated and compared with dibutyl phthalate. The epoxidized compounds give generally plastification which is slightly superior, with respect to thermal degradation on ageing, to the unsubstituted phthalic acid esters. There are 1 figure and 2 tables.

ASSOCIATION: Kazanskiy inzhenerno-stroitel'nyy institut
Kafedra khimii (Kazan' Institute of Construction
Engineering, Chemistry Department)

SUBMITTED: December 24, 1960

Card 3/3

S/153/62/005/003/002/004
E112/E435

AUTHORS: Byl'yev, V.A., Voskresenskiy, V.A.

TITLE: Plasticizing of polyvinylchloride with synthetic rubber CKH-40 (SKN-40)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Khimiya i khimicheskaya tekhnologiya, v.5, no.3, 1962, 474-476

TEXT: Preliminary experiments have shown that if compounded at 150 to 155°C, polyvinylchloride was compatible and miscible with any given concentration of synthetic rubber SKN. Best results were obtained with SKN-40. The effect of the polyvinylchloride: SKN-40 ratio on the tensile strength in kg/cm² and relative elongation in % was studied; the results are given in Table 1. The optimum ratio was 100:100 (parts by weight), which also gave best homogeneity of the composition and a minimum degree of swelling in the dichlorethane vapours. To further improve the properties, the effect of the addition of sulphur (0.1 to 5% on the weight of SKN-40) was studied; maximum improvement was achieved on the addition of 1% S. Properties with and without sulphur are Card 1/3

Plasticizing of polyvinylchloride ... S/153/62/005/003/002/004
E112/E435

compared and tabulated. The dibutyl phthalate plasticized composition was less stable (due to extraction of dibutyl phthalate by solvent) in benzene than material plasticized with SKN-40 and, consequently, had a lower elasticity and strength. As regards the stability in water (in terms of swelling) compositions with SKN-40 as plasticizer, particularly in presence of sulphur, were considerably superior to compositions with dibutyl phthalate as plasticizer. There are 1 figure and 3 tables. ✓

ASSOCIATION: Kazanskiy inzhenerno-stroitel'nyy institut
Kafedra khimii i fiziki polimerov
(Kazan' Construction Engineering Institute
Department of Chemistry)

SUBMITTED: February 20, 1961

Card 2/3

Plasticizing of polyvinylchloride ...

S/153/62/005/003/002/004
E112/E435

Table 1.

Ratio ПГ-4:СКН-40 (PF-4:SKN-40)	Tensile strength, kg/cm ²	Elongation, %	Hardness kg/cm ²
100 : 110	137.5	225	17.4
100 : 100	207.5	330	21.23
100 : 80	281.5	210	49.0
100 : 70	292.8	200	68.69
100 : 60	300.5	180	79.62
100 : 50	307.0	125	90.99

✓

Card 3/3

S/080/62/035/004/020/022
D214/D301

15.8050
AUTHORS:

Byl'yev, V. A. and Voskresenskiy, V. A.

TITLE:

The action of benzene and water on polyvinyl chloride plasticized by polymeric plasticizers

PERIODICAL: Zhurnal prikladnoy khimii, v. 35, no. 4, 1962, 914-915

TEXT: Recently polymeric plasticizers have been increasingly utilized in plasticizing polyvinyl chloride (PVC). It is the purpose of the present work to study the stability towards water and benzene of PVC thus plasticized. Several types of nitrile rubber were used as plasticizers. The compatibility of these plasticizers with PVC (resin ПФ-4 (PF-4)) increased with the number of nitrile groups, resulting in better physico-mechanical properties of the plastic. The highest stability towards water and benzene was obtained with plasticizer СКН-40 (SKN-40). Mixtures with different ratios of SKN-40 to resin PF-4 were studied. As the SKN-40 content increased the tensile strength of the sample decreased, the elasticity increased and the stability towards water and benzene was lowered. A 1:1

Card 1/2

The action of benzene ...

S/080/62/035/004/020/022
D214/D301

mixture gave samples with good physico-chemical properties with a sufficient stability towards water and benzene. There are 2 figures, 2 tables and 4 Soviet-bloc references.

SUBMITTED: January 21, 1961

Card 2/2

VOSKRESENSKIY, V.A.; SHAKIRZYANOVA, S.S.; BYL'YEV, V.A.

Certain regularities in the plasticization of polyvinyl chloride
by tetrahydrophthalate oxides. Izv.vys.ucheb.zav.;khim.i khim.-
tekh. 5 no.2:322-325 '62. (MIRA 15:8)

1. Kazanskiy inzhenerno-stroitel'nyy institut, kafedra khimii.
(Vinyl compound polymers) (Plasticization)

VOSKRESENSKIY, V.A.; ATAMANOVA, V.V.; BYL'YEV, V.A.

Effect of low-molecular weight liquids on some polymeric compatible systems. Zhur.prikl.khim. 37 no.1:145-149 Ja '64. (MIRA 17:2)

ACCESSION NR: AP4037235

S/0153/64/007/001/0132/0136

AUTHOR: Voskresenskiy, V. A.; Fridland, S. V.; Orlova, Ye. M.; By*1'yev, V. A.

TITLE: Several means of increasing the stability of plasticized systems.

SOURCE: Ivuz. Khimiya i khimicheskaya tekhnologiya, v. 7, no. 1, 1964, 132-136

TOPIC TAGS: plasticized system, plasticized polyvinylchloride, stability, thermal oxidation, stabilization, natural aging, artificial aging, physical mechanical index, high frequency heating, dibutylphthalate, dibutylsebacate, dibutylnitrophthalate, dibutylchlorophthalate, weight loss, swelling, tensile strength, elongation, hardness, plasticizer distribution, compatibility

ABSTRACT: The processes of natural and artificial aging of polyvinyl compositions plasticized with monomeric plasticizers of different chemical structure, and the effect of preceeding high frequency heating on the aging process were studied by noting the nature of the change in the physico-mechanical indexes of these compositions. Compositions comprising PF-4 polyvinylchloride resin, 100 parts by weight, plasticizer 64, and calcium stearate 3, were rolled into 2 mm films. Accelerated aging was at 80C under 5 atm. oxygen for 100 hours. In a dibutylphthalate

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ACCESSION NR: AP4037235

plasticized PVC under thermal oxidation, the weight decreased somewhat with time due to the evaporation of plasticizer, the degree of swelling in benzene increased, tensile strength increased and elongation and hardness decreased. Similar results were obtained with dibutylsebacate. After high frequency heating (19.5 megacycles, anode current 0.34-0.40 amps, grid current 200-250 amps, for 2 minutes at a distance of 5-7 mm from sample surface) the plasticized PVC was more stable to thermal oxidative aging (tensile strength increased more and elongation decreased less) due to more uniform distribution of the plasticizer in the polymer. A comparison was made of dibutylphthalate, dibutylnitrophthalate and dibutylchlorophthalate on PVC samples aged for 1 year at -5 to 24C, and 55-75% relative humidity. Dibutylnitrophthalate increases the indexes most (almost doubling the tensile strength and elongation) in comparison to the other two compounds. The changes with time of the properties of the nitro- and chloro-containing plasticizers are much slower than with dibutylphthalate itself. This is attributed especially to the compatibility of the nitro group with the polymer. Orig. art. has: 4 figures.

ASSOCIATION: Kazanskiy inzhenerno-stroitel'nyy institut Kafedra khimii (Kazan Construction Engineering Institute, Department of Chemistry)

Card

2/3

ACCESSION NR: AP4037235

SUBMITTED: 20Nov62

ENCL: 00

SUB CODE: MT

NO REF SOV: 006

OTHER: 001

Cord 3/3

ACCESSION NR: AP4010487

S/0080/64/037/001/0145/0149

AUTHOR: Voskresenskiy, V. A.; Atamanova, V. V.; By*1'yev, V. A.

TITLE: The effect of low molecular liquids on certain polymeric combined systems

SOURCE: Zhurnal prikladnoy khimii, v. 37, no. 1, 1964, 145-149

TOPIC TAGS: low molecular liquid, polymeric system, polyvinylchloride, plasticizer, monomeric plasticizer, combined polymeric system, physico-mechanical property, butyl rubber, polymeric plasticizer, polyethylene, nitrile rubber

ABSTRACT: The effect of various low molecular liquids, such as benzene, distilled water and acetic acid, on the weight and other physico-mechanical properties of polyvinylchloride, plasticized with SKN-40 nitrile rubber, and of high pressure polyethylene, plasticized with butyl rubber, were investigated. It was found that the low molecular liquids caused the plasticized polyvinylchloride

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ACCESSION NR: AP4010487

to swell, with this swelling eventually becoming stabilized. It was also observed that the effects of these low molecular liquids on the variation of physico-mechanical properties follow a definite pattern. This change of properties in the plasticized polyvinyl-chloride composition revealed that the molecules of the low molecular liquids diffuse in the polymeric system and produce a plasticizing effect. The experiments indicated that the plasticized polyvinyl chloride has low resistance to nitric acid (Sp gr 1.44), benzene, and acetic acid, while the plasticized polyethylene has low resistance to concentrated nitric acid, benzene, and perhydrol. It was concluded that the effects of low molecular liquids on the studied polymeric systems depend on chemical nature of the polymers and plasticizers used, the type of low molecular liquids used, and the duration of their action. The nature of the swelling of system plasticized with polymers differs from that of systems plasticized with the same amount of monomers. Orig. art. has: 6 figures.

ASSOCIATION: none

Card

2/32

0301/00 EMI(m)/EMP(j)/T IJP(c) WW/JWD/RM

ACC NR: AP6021972

(A) SOURCE CODE: UR/0153/66/009/002/0303/0305

AUTHOR: Byl'yev, V. A.; Voskresenskiy, V. A.

ORG: Chemistry Department, Kazan Engineering and Construction Institute (Kafedra khimii, Kazanskiy inzhenerno-stroitel'nyy institut)

TITLE: Effect of organic and inorganic admixtures on the thermomechanical properties of polyvinyl chloride

SOURCE: IVUZ. Khimiya i khimicheskaya tekhnologiya, v. 9, no. 2, 1966, 303-305

TOPIC TAGS: polyvinyl chloride, plasticizer, iron oxide, lead oxide, zinc oxide, magnesium oxide, polymer cross linking

ABSTRACT: The effect of plasticizing organic admixtures of diverse structure and polarity and the effect of metal oxide fillers on the thermomechanical properties of polyvinyl chloride (PVC) were studied. The modifying admixtures were (1) compounds with condensed benzene rings (α -naphthol, β -naphthol, α -nitroso- β -naphthol, ortho-hydroxyquinoline, 1,7-dihydroxynaphthalene, 2,7-dihydroxynaphthalene, 2,6-dihydroxynaphthalene) and also para-terphenyl, biphenyl, ortho-tolidine, and (2) the metal oxides PbO, PbO₂, ZnO, MgO, and Fe₂O₃. The proportion of PVC, plasticizers, and calcium stearate was (in parts by weight) 100:36:1.5, and that of PVC, metal oxides, and calcium stearate, 100:20:1.5. It was found that the plasticizing effect depends not only the polarity, but also on the structure of the organic substance, number,

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UDC: 539.199:541.68

ACC NR: AP6021972

type and position of the functional groups, and size of the plasticizer molecules. The introduction of PbO and PbO₂ was found to cause substantial cross-linking in PVC. MgO and ZnO intensify the dehydrochlorination of PVC, and the space network thus formed is thermally stable up to the temperature of complete decomposition. Iron oxides also produce rigid cross-linked systems in which flow processes are lacking. However, no appreciable shift in the glass transition temperature is caused by the metal oxides. Orig. art. has: 2 figures.

SUB CODE: 07,11/ SUBM DATE: 24Jul64/ ORIG REF: 006/ OTH REF: 001

PC

Card 2/277LP

BYLYGIN, I.A.

Further considerations on misinterpretation of the role of I. P. Pavlov in the development of Russian physiology and medicine. Zh. vysshei nerv. deiat. 1 no. 5:762-772 Sept-Oct 1951. (CML 23:3)

1. Institute of Physiology imeni I. P. Pavlov of the Academy of Sciences USSR.

SOV/24-58-4-24/39

AUTHORS: Bylyna, E.A., Losev, B.I. and Troyanskaya, M.A. (Moscow)

TITLE: Extraction of Germanium from Coal by γ -irradiation in Carbon Tetrachloride (Izvlecheniye germaniya iz ugley pri γ -obluchanii v chetyrekhkhloristom uglerode)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1958, Nr 4, pp 124 - 125 (USSR)

ABSTRACT: Soviet and foreign scientists have established that in many coal beds the germanium content is high enough for its extraction from coal (Refs 1, 2). Many investigations (Refs 6-8) have shown that γ -irradiation of carbon tetrachloride results in formation of free chlorine. This free chlorine is then used to extract germanium (chlorination method). Four types of coal were tried. They were heated in flasks with carbon tetrachloride and irradiated at the rate of 200 roentgen/sec. After irradiation the liquid phase and the coal were analysed for germanium. Recovery of germanium in the liquid phase was small for coals containing little of it. Results for extraction from two coals richer in germanium are given in Table 1, 53% and 100% being extracted in these cases with

Card1/2

LOSEV, B.I.; TROYANSKAYA, M.A.; BYLYNA, E.A.

Formation of hexachloroethane during γ -irradiation of carbon tetrachloride. Dokl.AN SSSR 125 no.1:133-134 Mr-Apr '59.
(MIRA 12:4)

1. Institut goryuchikh iskopayemykh AN SSSR. Predstavleno akademikom A.V.Topchiyevym.
(Ethane) (Carbon tetrachloride) (Gamma rays)

SOV/30-58-10-9/53

AUTHORS: Losev, B. I., Mel'nikova, A. N., Saprykin, P. Ya.,
Troyanskaya, M. A., Rylyna, E. A.

TITLE: New Methods of Examining the Material Composition of Coal
(Novyye metody izucheniya veshchestvennogo sostava ugley)

PERIODICAL: Vestnik Akademii nauk SSSR, 1958, Nr 10, pp 58-60 (USSR)

ABSTRACT: Research with the purpose of obtaining the most effective
methods of extracting rare metals from coal was carried out at
the Institut goryuchikh iskopayemykh Akademii nauk SSSR (Insti-
tute for **Mineral Fuels** of the AS USSR). For this purpose,
γ-rays, ultrasonics, and electro-hydro effects were used. The
influence of the dose of radiation on the yield of germanium
may be seen in table 1. The second method consists of ultra-
sonic treatment of coal during its halogenation. The results
of experiments with ultrasonic treatment of coal in water are
listed in table 2. A more intensive disruption of the cohesive
forces of rare elements in coal is obtained by the use of elec-
tro-hydraulic effects. These experiments were carried out in the
Laboratoriya elektrogidravlicheskogo effekta Leningradskogo
Politekhnikheskogo instituta (Laboratory for Electro-Hydraulic

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SOV/30-58-10-9/53

New Methods of Examining the Material Composition of Coal

Effects of the Leningrad Polytechnic Institute) under the
direction of L. A. Yutkin. There are 2 tables.

Card 2/2

SOV/ 20-120-2-24/63

AUTHORS: Losev, B. I., Troyanskaya, M. A., Bylyna, E. A.

TITLE: The Influence Exerted by γ -Radiation Upon Coals in Aqueous and Carbon-Tetrachloride Medium (Deystviye γ -izlucheniya na ugli v vodnoy srede i v srede chetyrekhkhlorigo ugleroda)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol. 120, Nr 2, pp. 314 - 315 (USSR)

ABSTRACT: From the papers on the water radiolysis (References 1,2) it is known that ions and free radicals form under the influence of ionizing radiations and in the presence of atmospheric oxygen. These are capable of bringing about an oxidation or reduction of substances added to the irradiated aqueous system. It could be expected that a γ -radiation in an aqueous medium would lead to chemical changes of the most reactive part of the organic substance of the coals, whereby the germanium contained in the coal would pass over into the aqueous medium. Besides the products of a radiolytic oxidation of the coals could be investigated and identified. The dose of irradiation was 200 r/sec and the integral dose 10^8 r. Co^{60} served as source of the γ -rays.

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The Influence Exerted by γ -Radiation Upon Coals in SOV/20-120-2-24/63
Aqueous and Carbon-Tetrachloride Medium

4 types of coal were investigated: brown coal of the Podmoskovnyy basin and 3 sorts of the Donetskiiy basin. The germanium content in 2 of the latter was low. The maximum yield of germanium was obtained of the Donetsk type PZh (50,2%) and of the brown coal (41,0%). The chlorination method (References 3-5) was used for further increasing the yield of germanium. Elementary chlorine is used for it. By more intensively chlorinating means such as sulfur monochloride, carbon tetrachloride and others this method can be considerably extended. As CCl_4 yields free chlorine as main product by γ -irradiation, the authors irradiated coal samples in CCl_4 . The transition from germanium into the liquid phase of the coals of the Donetsk types "G" and "K" was insignificant at an integral dose of radiation of 10^6 and 10^7 . At a dose of 10^8 the yield of germanium of the coke-coal amounted to 13%, of the gas-coal to only 5,6% of the total content. 53% germanium was produced of the type PZh (table 2). A complete extraction was obtained of the dried brown coal in dry CCl_4 (table 2). At an integral dose of 10^8 the entire ger-

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The Influence Exerted by γ -Radiation Upon Coals in SOV/20-120-2-24/63
Aqueous and Carbon-Tetrachloride Medium

manium passes over into the liquid phase and can from there be produced by means of the known methods. The degree of extraction of germanium is not only dependent on the dose of irradiation but also on the amount of water present in the system. Besides the described use of CCl_4 for radiolysis an increased solubility of coals in CCl_4 after a γ -irradiation was also observed which may be of interest from the standpoint of the chemical working of coals. There are 2 tables and 8 references, 6 of which are Soviet.

ASSOCIATION: Institut goryuchikh iskopayemykh Akademii nauk SSSR (Institute of Fossil Fuel AS USSR)

PRESENTED: January 13, 1958, by A. V. Topchiyev, Member, Academy of Sciences, USSR

SUBMITTED: January 10, 1958

Card 3/4

The Influence Exerted by γ --Radiation Upon Coals in
Aqueous and Carbon-Tetrachloride Medium

Sov/20-120-2-24/63

1. Coal--Effects of radiation
2. Gamma rays--Applications
3. Cobalt isotopes(Radioactive)--Applications
4. Solutions
--Applications
5. Carbon tetrachloride--Applications

Card 4/4

5.4100, 5.3160

75697
SOV/80-32-10-46/51

AUTHORS: Losev, B. I., Bylyna, E. A.

TITLE: Brief Communications. Paramagnetic Resonance in Mined Coals

PERIODICAL: Zhurnal prikladnoy khimii, 1959, Vol 32, Nr 10, pp 2359-2361 (USSR)

ABSTRACT: In the present paper the paramagnetic resonance of several mined coals of the Donetsk coal field was measured. Estonian peat was also checked, but paramagnetic resonance was not detected. Diphenylpicrylhydrazyl (I) (Abstracter's note: in the text it is given as diphenylpicrylhydrazine) was taken as standard, with a g -factor of 2.003 ± 0.001 at a frequency of 9,450 megahertz. The approximate concentration of free radicals was calculated by comparison with absorption lines of standard samples, containing 1% of I. The authors tend to agree with Ingram that the "free radical" concentration is a function of the degree of metamorphism. There is 1 table; 2 figures; and 19 references, 5 Soviet, 8 U.S., 5 British, 1 German. The 5 U.S. and British references are:

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Brief Communications. Paramagnetic
Resonance in Mined Coals

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SOV/80-32-10-46/51

I. G. Gastle, Phys. Rev. 92, 1063 (1953); 95, 846 (1954);
F. K. Henning and others, *ibid*, 1088 (1954); I. E. Ingram,
I. E. Bennett, Phil. Mag. 45, 545 (1954); and 42, 1221 .
(1954).

SUBMITTED: December 8, 1958

Card 2/2

5 (4)

AUTHORS: Losev, B. I., Troyanskaya, M. A., Bylyna, E. A. SOV/20-125-1-35/67

TITLE: The Formation of Hexachloro Ethane Due to γ -irradiation of Carbon Tetrachloride (Obrazovaniye geksakhloretana pri γ -obluchenii chetyrekhkhlorigistogo ugleroda)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 125, Nr 1, pp 133 - 134 (USSR)

ABSTRACT: The authors studied the products resulting from the chlorination of coal which were formed in carbon tetrachloride due to γ -irradiation of mineral coals. The production of samples is outlined. Co^{60} with a capacity of 21,000 gram-equivalents of radium served as γ -source. The irradiation was performed with dose rates of $3.5 \cdot 10^6$ and $1.15 \cdot 10^6$ r/hour. In all cases the total dose amounted to 10^8 r. The coal was then separated from CCl_4 and further investigated. The carbon tetrachloride, which after irradiation with coal assumes a dark reddish brown coloration, was distilled; the fractions $76.5^\circ - 78^\circ$, $78^\circ - 80^\circ$ and $80^\circ - 90^\circ$ as well as a thick resin-like residue were thus ob-

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The Formation of Hexachloro Ethane Due to -irradiation of Carbon Tetrachloride

SOV/20-125-1-35/67

tained; with further increase in temperature a white, crystalline, pungent substance was sublimed out of the above-mentioned residue. The same white substance was sublimed out of the aforementioned fractions. In water it is insoluble, but dissolves readily in acetone, benzene, and carbon tetrachloride: its melting point is $183.5 - 184^{\circ}$, and its weight $M = 236.76$. This substance is assumed to be hexachloro ethane. In various experiments hexachloro ethane was synthesized in a quantity of 1,000 molecules per 100 eV. This value indicates a chain-like nature of the reaction, and may be explained by the following scheme (Ref 5): $CCl_4 \xrightarrow{\gamma} CCl_3^{\bullet} + Cl^{\bullet}$, $CCl_4 + Cl^{\bullet} \rightarrow CCl_3^{\bullet} + Cl_2$, $CCl_4 + CCl_3^{\bullet} \rightarrow C_2Cl_6 + Cl^{\bullet}$, $2CCl_3^{\bullet} \rightarrow C_2Cl_6$. The authors thank A. Kh. Breger for his interest and help in this investigation. There are 8 references, 5 of which are Soviet.

ASSOCIATION: Institut geologii i iskopayemykh Akademii nauk SSSR (Institute of Mineral Fuels of the Academy of Sciences USSR)

PRESENTED: November 25, 1958, by A. V. Topchiyev, Academician

SUBMITTED: November 25, 1958

Card 2/2

5(4)
 AUTHORS: Losev, B. I., Bylyna, E. A. SOV/20-125-4-34/74

TITLE: Paramagnetic Resonance in Fossil Coals (Paramagnitnyy rezonans v iskopaemykh uglyakh)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 125, Nr 4, pp 814-816 (USSR)

ABSTRACT: The authors give a survey on the discovery (1953, Refs 1, 2) and investigation (Refs 6-10) of paramagnetic resonance (PR) in graphite, atrata, activated charcoal, carbonized organic residues, fossil coal and carbonized products. The PR of fossil coal was used for the determination of the number of free radicals per 1 g coal as a function of the degree of metamorphism (Ref 6). In coal of different stages of metamorphism the number of free radicals per 1 g coal fluctuated between 0.5.10 - 3.10 per gram, i.e. 1 free radical per 1500-4000 carbon atoms. This confirms that the free radicals are not conduction electrons, responsible for the PR (Ref 9). A PR, easily to be measured was found (Ref 11) in anthracite, mineral coal, charcoal, petroleum asphalt, carbomite, rubber as well as in petroleum. The intensity of the effect increased by about the threefold in all cases under cooling until the temperature of liquid air is reached; this

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Paramagnetic Resonance in Fossil Coals

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holds for both the free radical and anthracite. The authors believe that the PR is in all cases due to the free radicals or the "torn bonds" between the carbon atoms. In the work under review the authors measured the PR of several fossil coal types and of Estonian peat with respect to the degree of metamorphism. Peat contained no PR (Table 1). Figures 1 and 2 show the PR of the coal investigated. Diphenyl picryl hydrazine (DPH) was used for purposes of comparison. The approximative concentration of the "free radicals" was calculated by comparing the absorption lines with the standard sample (1% DPH-content). It is true that these concentrations are approximative with respect to this sample, with respect to their mutual function, however, the accuracy of these concentrations is within $\pm 10\%$. Figure 2 shows these concentrations as a function of the degree of metamorphism of coal. They agree with reference 6. In the USSR as well as abroad (Refs 13-19) scientists arrived at the conclusion that the molecular compounds of the carbon substance consist of condensed aromatic nuclei to which side chains are connected, called "fringes". The degree of condensation increases in the course of metamorphism, whereas the number of the side chains decreases. The authors agree with Ingraham et al (Ref 6): the concentration of the free radicals is not only a function of the degree of metamorphism but also

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Paramagnetic Resonance in Fossil Coals

SOV/20-125-4-34/74

a function of the degree of condensation of the aromatic cycles. Future investigations are to find what sort of function is concerned. There are 1 figure, 1 table, and 19 references, 4 of which are Soviet.

PRESENTED: November 25, 1958, by A. V. Topchiyev, Academician

SUBMITTED: November 25, 1958

Card 3/3

KOROVKIN, K.N.; OKS, N.A.; BYLYNA, E.A.; YEVDOKIMOV, V.B.

Magnetic torsion balance. Zhur. fiz. khim. 35 no.3:677-681 Mr '61.
(MIRA 14:3)

1. Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova.
(Torsion balance)

TRAILINA, Ye.P.; ZELENTSOV, V.V; SAVICH, I.A.; BYLYNA, E.A.;
YEVDOKIMOV, V.B.

Magnetic susceptibility of the chelate compounds of divalent copper,
nickel, and cobalt with Mannich bases. Zhur. fiz. khim. 35
no. 4:960-962 Ap '61. (MIRA 14:5)

1. Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova.
(Chelates--Magnetic properties)

BYLYNKA, G.K.; BARULIN, V.T.

Rapid mining of a heading rise with the PK-3m cutter-loader. Ugol'
39 no.12:11-13 D '64. (MIRA 18:2)

1. Shakhta No.27 kombinata Vorkutugol'.

OL'KHOVOY, L.G.; SHEVCHENKO, L.P.; BABUSHKIN, V.I.; BYNAKOV, A.G.; MCHEDLOV-
PETROSYAN, O.P.

Water resistant non-autoclaved materials of hydraulic lime and silica.
Stroi.mat. 10 no.8:16-18 Ag '64. (MIRA 17:12)

Byndiu, C.

RUMANIA / Forestry. Forest Cultures.

K

Abs Jour: Ref Zhur-Biol.; No 7, 1958, 29581.

Author : Byndiu, C., Rubtsov, St.

Inst : Not given.

Title : Root Formation Methods in Oak Cuttings.
(O sposobakh okoreneniya cherenkov duba
(Rumyniya).

Orig Pub: Rev. padurilor, 1956, 71, No 7, 427-429.

Abstract: No abstract.

Card 1/1

VASIL'YEV, M.Ye.; GROZOVSKIY, A.L.; IL'INA-MARKOSYAN, L.V.; TISSENBAUM,
M.S. & BYNIN, B.N., prof.; TSITRIN, D.N., red.; SENCHILO, K.K.,
tekhn.red.

[Prosthetic dentistry; a textbook for students of dentistry and
prosthetic dentistry] Zuboproteznaia tekhnika; uchebnik dlia
uchashchikhsia zubovrachebnykh i zubotekhnicheskikh uchilishch.
Izd. 5., ispr. i dop. Moskva, Gos. izd-vo med. lit-ry, 1958.
495 p. (MIRA 12:1)

(TETH, ARTIFICIAL)

BYNOV, A.M.; KUZ'MICHEV, P.I.

Batchet wrench. Stan. 1 instr. 25 no.10:34 0 '54. (MLRA 7:11)
(Wrenches)

Bynov, F. A.

✓ The biology and biochemistry of *Nicotiana rustica*.
F. A. Bynov. *Izvest. Estestven.-Nauch. Inst., Molotov.*
Univ. 13, No. 8, 807-48(1954); *Referat. Zhur. Khim., Biol.*
Khim. 1955, No. 13532. — The nicotinic content of the leaves
of 28 varieties of *N. rustica* has been detd. B. S. L.

BYNOV, F.A.

M-5

USSR/Cultivated Plants - Fruits and Berries.

Abs Jour : Ref Zhur - Biol., No 3, 1958, 10972

Author : Bynov, F.A.

Inst : Molotov University.

Title : Toward a Pomology of the Hither-Urals Apple Tree.

Orig Pub : Uch. zap. Molotovsk. un-t, 1956, 10, No 1, 83-101

Abstract : The soil and climatic conditions of Molotovskaya oblast' are sufficiently favorable to permit the development of gardening in this zone. A large number of apple varieties are cultivated in this oblast', the four groups being local, Michurin, Middle Russian, and Siberian. The local and Siberian varieties are the most frost-resistant, and as far as chemical composition and taste are concerned the local varieties are hardly inferior to the Michurin and Middle Russian varieties. Of the greatest interest are the

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USSR/Cultivated Plants - Fruits and Berries.

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Abs Jour : Ref Zhur - Biol., No 3, 1958, 10972

local varieties developed by the local population. They are particularly able to withstand the severe conditions of the oblast'. It is recommended that the local varieties be studied carefully and used for reproduction.

Card 2/2

BYNOV, F.A.; AGAPOVA, M.V.

Fruit characteristics of apple varieties developed by local horticulturists. Uch. zap. Perm. gos. un. 13 no.1:25-32 '60.
(MIRA 14:11)

(Perm Province--Apple--Varieties)

BYNOV, F.A.; TITOVA, O.V.

Effect of 2,4-D on the catalase activity and growth of wheat seedlings. Uch. zap. Perm. gos. un. 13 no.1:33-36 '60.

(MIRA 14:11)

(2,4-D)
(Catalase)
(Wheat)

TITOVA, O.V.; BYNOV, F.A.; CHERNYSHEVA, L.M.

Effect of desiccants on the ripening of spring wheat in the
cis-Ural area. Uch. zap. Perm. gos. un. 13 no.1:43-46 '69.
(MIRA 14:11)

(~~Perm~~ Province—Wheat—Harvesting)
(Drying agents)

BYNYATYAN, G.Kh.

Effect of pain and conditioned pain stimuli on renal function
[in Armenian with summary in Russian]. Nauch.trudy Inst.fiziol.
AN Arm.SSR. 3:5-33 '50. (MIRA 9:8)
(PAIN) KIDNEYS)

BYNYATYAN, L.B., kandidat tekhnicheskikh nauk; ALEKSANDROYAN, V.V., inzhener.

Calculation of the amount of water to be pumped in well-type sub-
surface drainage. Gidr. i mel. 8 no.12:14-21 D'56. (MIRA 10:1)
(Drainage)

BATUSOV, Yu.A.; BYNYATOV, S.A.; SIDOROV, V.M.; YARBA, V.A.

Total cross sections of the $\pi^- + p \rightarrow \pi^+ + \pi^- + n$ reaction
near the threshold and the angular distributions of secondary particles.
IAd. fiz. 1 no.3:526-532 Mr '65. (MIRA 18:5)

1. Ob'yedinennyy institut yadernykh issledovaniy.

SYNYAYEVA, M. K.

U S S R .

✓ Spectrographic characteristics of prepared penicillin. M. N. Fisher and M. K. Synyayeva. *Vestnik Leningrad. Univ.* 5, No. 3, 106-14 (1959).—P. and B. studied various forms of com. penicillin (I) by means of both ultraviolet and infrared spectrophotometry. Investigations were made on P-F (pentenyl-I), P-G (benzyl-I), P-X (β -hydroxybenzyl-I), P-K (pentyl-I), and flavio-P (flavio-I). Spectral characteristics are given for the various forms. Infrared spectrophotometry clearly indicates the penicillin dipeptide bond to be in the form of a 4-membered β -lactam ring.

R. D. Kross

BYNYAYEVA, M.K.

17

CA

Purification of penicillin by chromatographic method.
M. K. Bynyaeva. *Trudy Leningrad. Sanit. Gigen. Med.*
1957. 5: 188-89 (1957).—With suitable adsorbent it is
possible to achieve a 3-fold purification of crude penicillin.
Specially prepd. Al_2O_3 (directions not given) was used as
the adsorbent, with either $CHCl_3$ or Et_2O as the solvent. The
former gave dark brown, yellow, brown, and orange-yellow
zones, while the latter gave dark brown, light brown, orange,
and yellow zones. The dark brown zone carries no activity,
while the light brown zone carries almost all penicillin
activity. The orange zone has very little activity; the
yellow zone is similar. The loss of penicillin in the chro-
matographic purification does not exceed 13-20%, es-
pecially at a low temp. (3°). The purified product is
perfectly suited for clinical use. Orange and yellow zones
contain substances that cause reddening of the skin and
temporary pain after subcutaneous injection. G. M. K.

Translation M-81, 19 Jan 55

DYNYAYEVA, M. K.

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✓ 3342. Physico-chemical and chemical methods of analysis of chlorates, hypochlorites, chlorides, alkali and carbonates in solution. I. E. FIS and

2

M. K. DYNAYEVA, *Trudy Leningrad. Tekhnol. Inst.*
 1956, V. 11, No. 10, 178-185; *Ref. Zhur.*,
 Khim., 1956, Abstr. No. 1172. The following
 methods of analysis of the components of hypo-
 chlorite soln. are studied—the determination of
 active Cl (by potentiometric titration) with Na_2SO_3
 and arsenous oxide soln.; the potentiometric deter-
 mination of active Cl, free alkali, and carbonates by
 double titration with acid, by using the electrode
 obtained by the decomposition of H_2O_2 on Pt; the
 potentiometric titration of Cl by AgNO_3 soln. by
 using the silver chloride electrode; the combined
 determination of hypochlorite and chlorate by
 titration with soln. of FeSO_4 and KMnO_4 . The
 various methods for the determination of elementary
 Cl are critically examined. For the calculation of
 the elementary Cl content of the soln. the use of
 formulae based on the hydrolysis constant is recom-
 mended (Yakovkin, *Zhur. Russ. Fiz. Khim. Obshch.*,
 1900, 82, 873). Method for the complete analysis
 of alkaline and slightly acid hypochlorite soln. have
 been evolved.
 C. D. KOPIN

By N Y A Y E V A, M. K.

USSR/Analysis of Inorganic Substances

G-2

Abs Jour: Ref Zhur-Khimiya, No 6, 1957, 19632

Author : I. Ye. Flis, M. K. Bynyayeva.

Inst : ~~Anolotov Tech. Inst. Leningrad~~

Title : Analysis of Hypochlorites and Chlorites in Solution.

Orig Pub: Zh. Analit. Khimii, 1956, 11, No 4, 453 - 458

Abstract: The conditions of potentiometric titration of ClO_2^- and ClO^- with Na_2SO_3 and As_2O_3 were studied. It was established that ClO_2^- reacted slowly with Na_2SO_3 in an alkaline medium, but it reacted quickly in an acidified medium; therefore, ClO_2^- should be titrated in a neutral and slightly acid medium (pH about 7.0 to 4.0). Slightly alkaline

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